SIEMENS

MAMMOMAT 3000 Opdima®

SP

Service

Service Instructions

Workstation

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Safety Information

Follow all general safety guidelines.

CAUTION	**Switch off the entire system when working on the OPDIMA system and ensure that it cannot be switched on inadvertently during the procedure.**
CAUTION	**Printed circuit boards must be replaced if components soldered onto the board, including fuses, are defective.**
NOTICE	**Follow C-MOS guidelines when handling components.**

Special safety guidelines for laser products:

⚠WARNING	**Laser products are not allowed to be operated without the appropriate housing.**
⚠WARNING	**Do not look into the laser beam directly or at its reflection on smooth, mirror-like surfaces.**

If you have to remove cabinet covers, perform a protective conductor measurement after you have installed the covers again.

NOTICE	**The protective conductor resistance must be less than/equal to 100mOhm (measured against the protective conductor bar in the PDS).**

Introduction

This service instruction is valid from serial number 1109 for SUN workstations with art. no. 64 30 453.

The workstation consists of the main components

- **CPU Box with**
  - Hard Disk Drive
  - Camera Interface
  - Serial Interface
- **20" Monitor**
- **Archive System MO**

The workstation is used for the application software platform, the communication with the CCD camera interface and the control of external units.

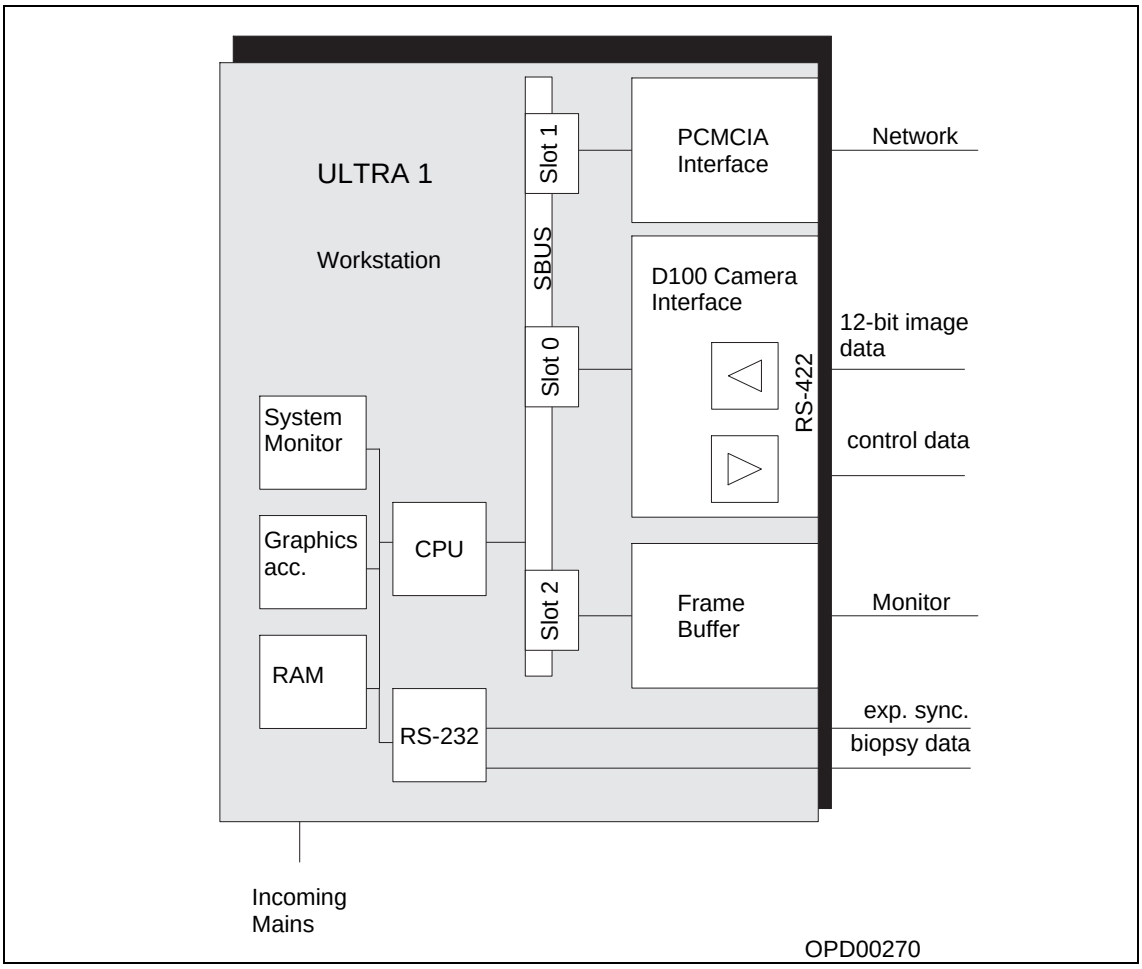

Fig. 1 Principles of the Ultra 1

Tools and Auxiliary Materials Required

There are no more tools required than the below numbered unless otherwise noted.

- anti-static wristband and grounded tabletop pad (TDK equipment Type 8005 from 3M Deutschland GmbH).
- screwdriver
- Phillips screwdriver

Switching off the Workstation

- Exit the OPDIMA application.
- Select "shutdown" in the "login" dialogue.

NOTICE	**The power is turned off automatically when shutdown is selected.**

Removing and Installing the Covers

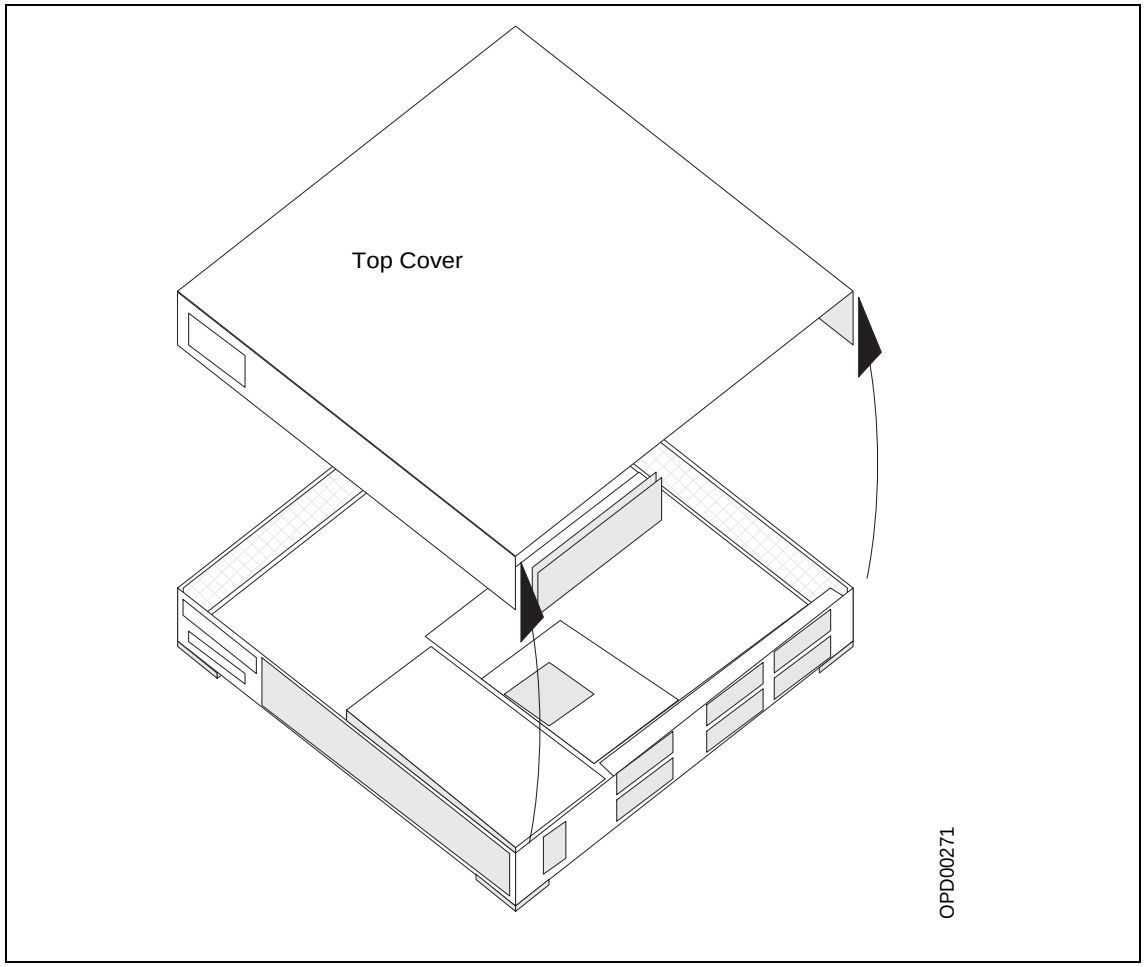

Fig. 2 Removing the top cover

CAUTION	**Switch off the entire system and ensure that it cannot be switched on inadvertently during the procedure before you remove covers.**

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Fig. 3 Rear Side of the box (without D100).

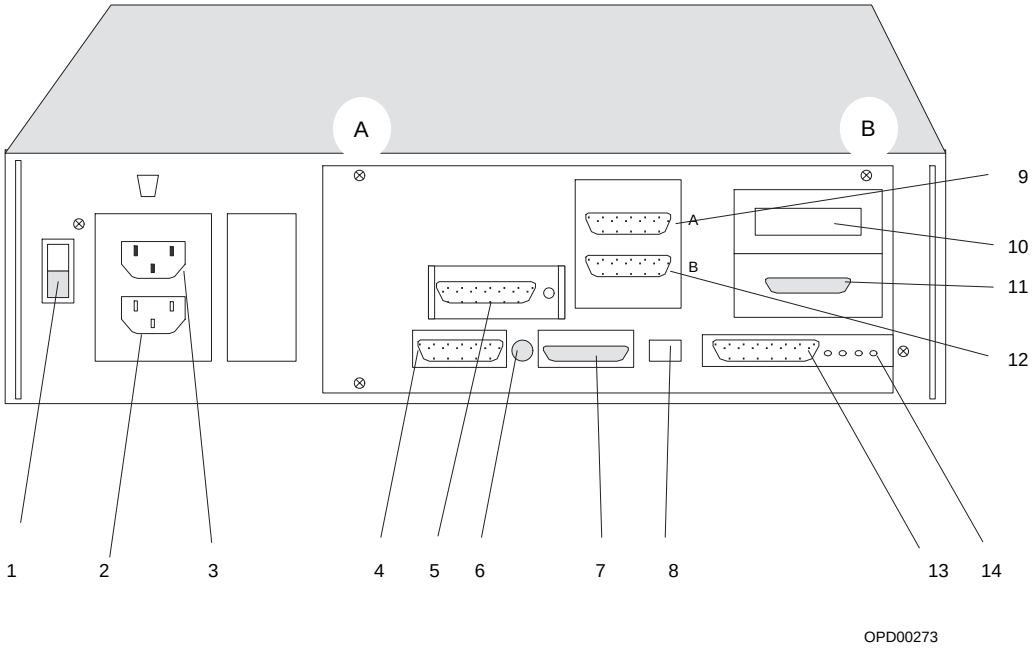

Fig. 4 Back Panel Layout

1	Power On / Off	8	<...> Twisted Pair Interf. 10Base-T
2	Mains Power Supply	9	Serial Line A (Biopsy Contr. X204)
3	Monitor Power Supply [1])	10	PCMCIA Interface
4	// Parallel Line	11	Camera Controller D100
5	Monitor Interface	12	Serial Line B (Biopsy Contr. X204)
6	Keyboard Interface	13	SCSI Interface
7	<...> SCSI Interface	14	MIC

Tab. 1 Rear Side of the Ultra 1 with all Interfaces

- Use a Phillips screwdriver to loosen the screws in the upper-right and upper left corners of the back panel (refer to A and B Fig. 4).
- Hold the sides of the cover and lift it from the back panel. When the cover clears the back panel, move the cover away from the front panel to free it from the chassis.

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Replacing the CPU

Removing the Ultra 1

CAUTION	Switch off the entire system and ensure that it cannot be switched on inadvertently during the procedure before you remove covers. Refer to chapter 1 when you remove the covers from the box.

NOTICE	Follow C-MOS guidelines when handling components.

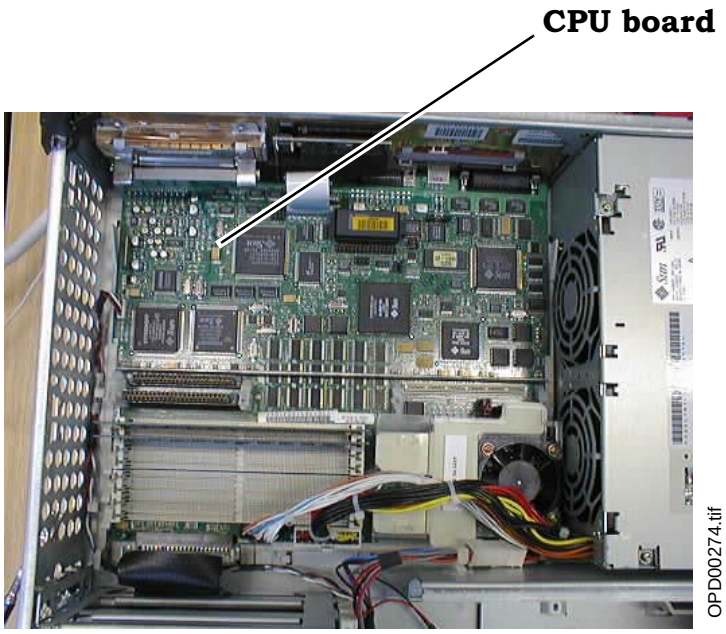


Fig. 1 Top View of the open box (without D100)

- Dismount the top cover of the box (refer to chapter 1).
- Disconnect all cables from the back of the box.
- Loosen all four screws form the back of the box (refer to Fig. 2). Screws C and D secure the CPU to the back plate of the box.

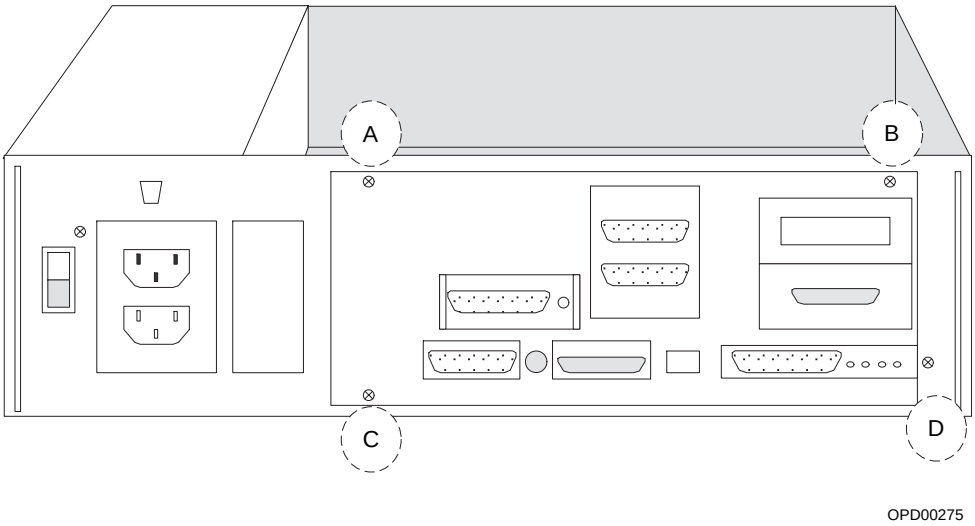


Fig. 2 Screws on the rear side of the box

- Remove the four interface and power plugs from the CPU board (refer to Fig. 3).

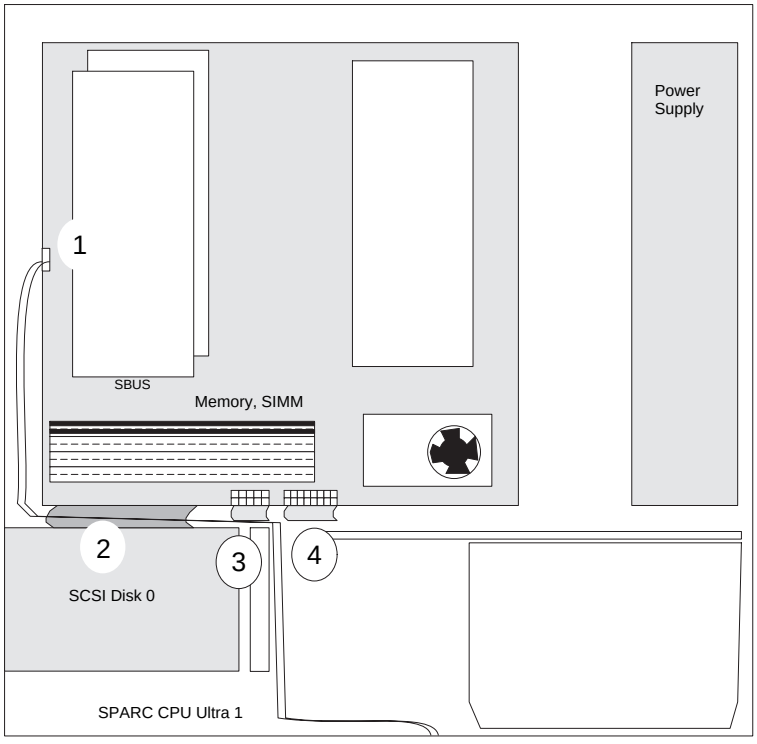


Fig. 3 Connectors on the Ultra 1

- Push the CPU board slightly to the back and remove the board and place it on the grounded tabletop pad.

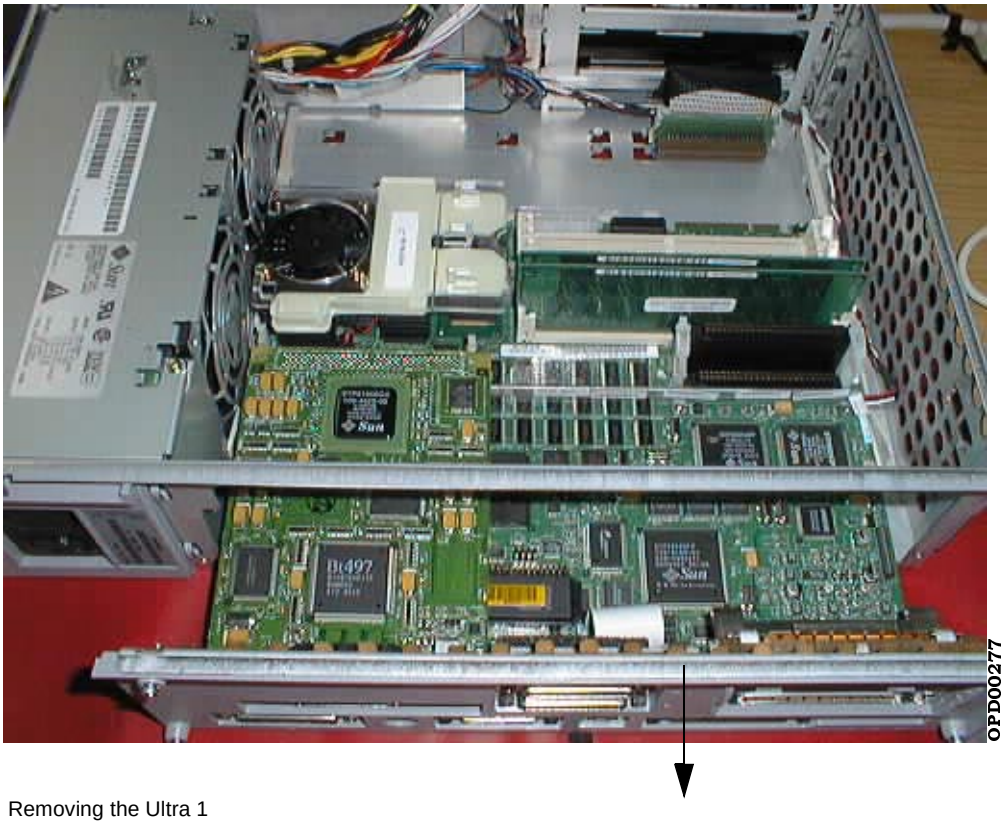


Fig. 4 Removing the Ultra 1

- Remove the NVRAM (refer to chapter "Replacing the NVRAM").
- Remove DSIMMs (refer to chapter "Replacing the Memory Module").
- Remove the Camera Interface D100 from the defective CPU board (refer to chapter "Replacing the Camera Interface D100).
- Remove the Frame Buffer (refer to the chapter "Replacing the Frame Buffer").

Installing the Ultra 1

NOTICE	**Follow C-MOS guidelines when handling components.**

- On the new CPU board, install the previously removed NVRAM and the memory modules.

- Install the previously removed Camera Interface D100 and any other boards which were removed from the defective board.
- Place the new CPU board on its guide rails. Push the CPU board toward the front of the box until it fits into the correct position.
- Mount the four interface and power plugs on the CPU board (refer to Fig. 3).
- Fasten the two screws on the back of the box (C and D refer to Fig. 2).
- Connect all cables on the back of the box and ensure that they match their original status.
- Mount the top cover of the box (refer to chapter 1).

Tests and Adjustments

- Switch on the system.
- Ensure that the system is operating properly.

Replacing the NVRAM

General

Read these instructions completely prior to beginning the replacement.
Follow all procedures for removing and installing the NVRAM.

Safety Notes

Follow all general safety guidelines when replacing the NVRAM.
Note the special safety guidelines indicated in these instructions.

Removing the NVRAM

CAUTION	**Switch off the entire system and ensure that it cannot be switched on inadvertently during the procedure before you remove covers. Refer to chapter 1 when you remove the covers from the IMS container.**

NOTICE	**Follow C-MOS guidelines when handling components.**

- Remove the frame buffer board and place it on the grounded tabletop pad.
- Locate the NVRAM and remove the NVRAM from the board (refer to Fig. 5).

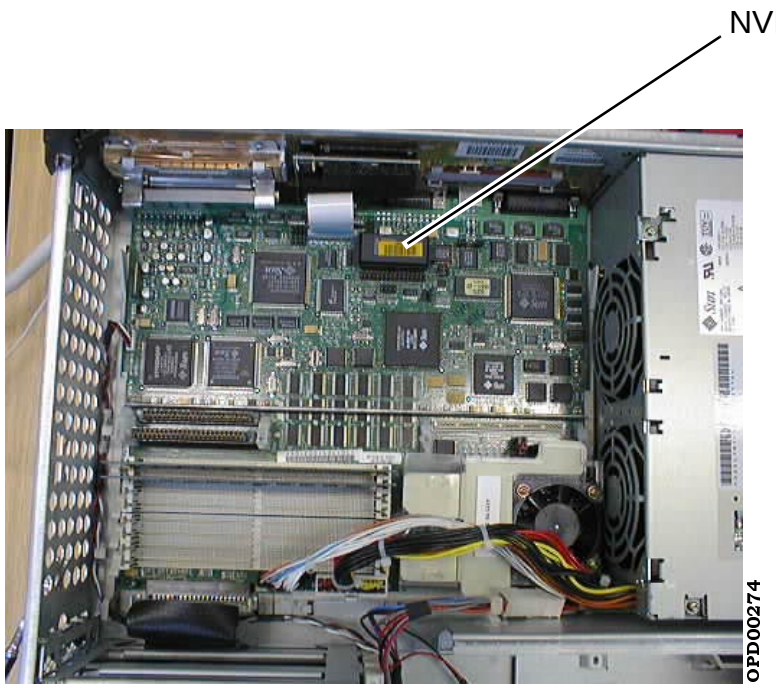


Fig. 5 Replacing the NVRAM

Installing the NVRAM

NOTICE	**Follow C-MOS guidelines when handling components.**

- Install the NVRAM on the CPU board (refer to Fig. 5).
- Install the frame buffer board.
- Establish all cable connections and ensure that they match their original status.

After having installed a new NVRAM, ensure that the system can function with this “new” CPU. The following three additional steps are necessary:

- Change the parameter values of the NVRAM to the correct values.
- Replace the old Internet address with the new one.
- Replace the old CPU no. with the new one.

Parameter Values in the NVRAM

Parameter Name	Value	Default Value
tpe-link-test?	true	true
scsi-initiator-id	7	7
keymap		
ttyb-rts-dtr-off	false	false
ttyb-ignore-cd	true	true
ttya-rts-dtr-off	false	false
ttya-ignore-cd	true	true
ttyb-mode	9600,8,n,1,-	9600,8,n,1,-
ttya-mode	9600,8,n,1,-	9600,8,n,1,-
sbus-probe-list	01	01
mfg-mode	off	off
diag-level	max	max
#power-cycles	10	
system-board-serial#	.....	
system-board-date		
fcode-debug?	false	false
output-device	screen	screen
input-device	keyboard	keyboard
load-base	16384	16384
boot-command	boot	boot
auto-boot?	true	true
watchdog-reboot?	true	false
diag-file		
diag-device	net	net
boot-file		
boot-device	disk	disk net
local-mac-address?	false	false
ansi-terminal?	true	true
screen-#columns	80	80
screen-#rows	34	34
silent-mode?	false	false
use-nvramrc?	true	false
nvramrc		
security-mode	none	
security-password		
security-#badlogins	0	
oem-logo		
oem-logo?	false	false
oem-banner		
oem-banner?	false	false
hardware-revision	001	
last-hardware-update	0	
diag-switch?	false	false

Tests and Adjustments

- Switch on power to the system.
- Ensure that the system is functioning properly.

Replacing the Memory Module

General

Read these instructions completely prior to beginning the replacement.
Follow all procedures for removing and installing the DSIMM.

NOTICE	**A defective memory can cause a dark monitor.**

Safety Notes

Follow all general safety guidelines when replacing the DSIMM.
Note the special safety guidelines indicated in these instructions.

Removing the Memory Module

CAUTION	**Switch off the entire system and ensure that it cannot be switched on inadvertently during the procedure before you remove covers. Refer to chapter 1 when you remove the covers from the IMS container.**

NOTICE	**Follow C-MOS guidelines when handling components.**

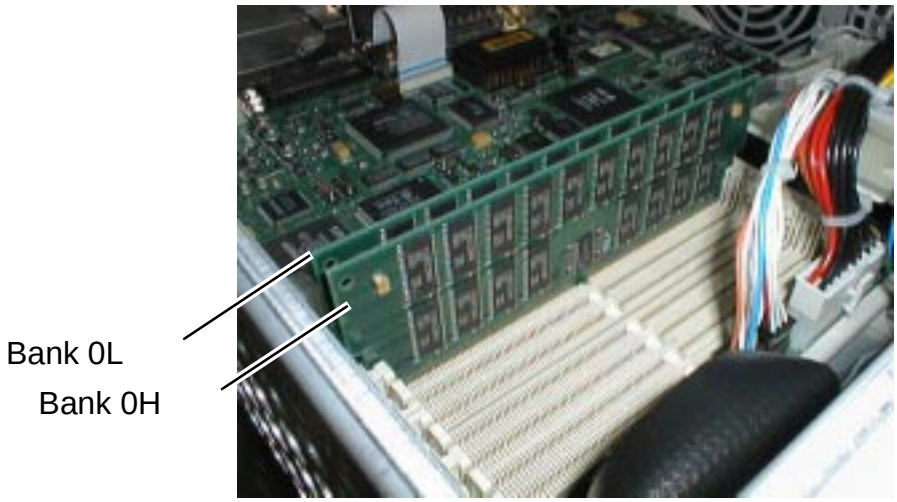
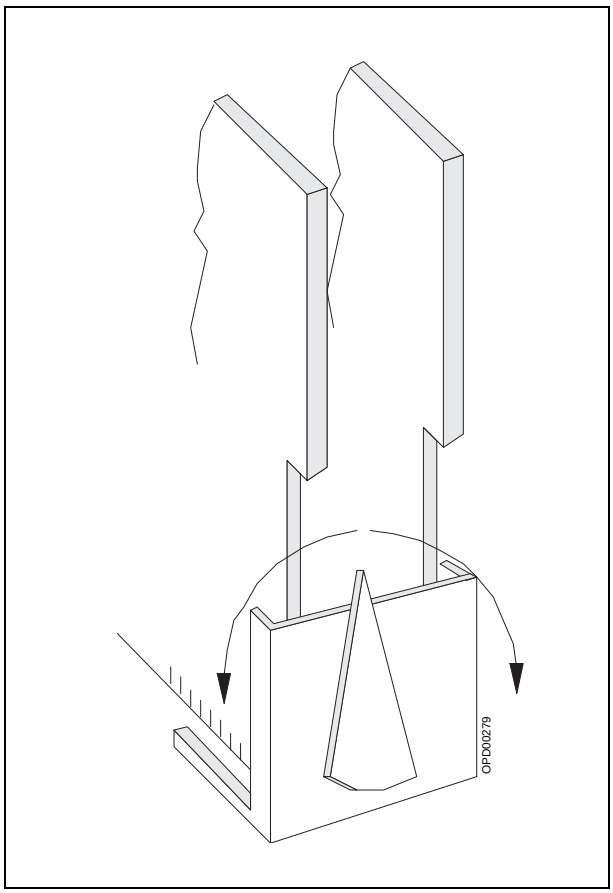


Fig. 6 SIMMs of the Ultra 1



- Locate and select the DSIMM you have to replace (refer to Fig. 6).
- Release the ejector of the module. To eject the SIMM press the small ejector to the opposite side of the SIMM you want to release (refer to Fig. 7).
- Release the module from the socket and place it on a grounded tabletop pad.

Fig. 7 SIMM retainers

Installing a Memory Module

NOTICE **Follow C-MOS guidelines when handling components.**

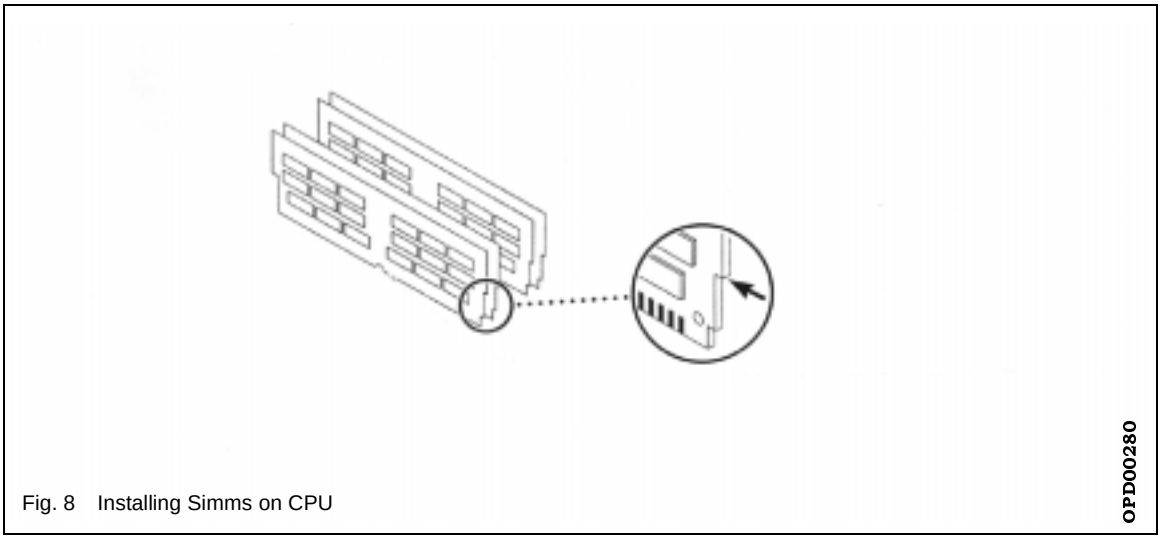


Fig. 8 Installing Simms on CPU

- Unpack the DSIMM, holding it only by the edges.
- Refer to Fig. 8 for proper DSIMM orientation. Align the notch on the side of the DSIMM with the ejector on the DSIMM slot.
- Place both thumbs on top of the DSIMM and push it firmly into its connector until you hear a "click".

NOTICE **Your system only runs properly if a SIMM has been installed in both slots.**

Tests and Adjustments

- Switch on power to the system.
- Ensure that the system is functioning properly.
- After the reset the system should show up with: "64 MB Memory installed".

```
Sun Ultra 1 UPA / SBus (Ultra SPARC 143 MHz), Keyboard Present
Open Boot 3.3, 64 MB Memory installed, Serial#........
Ethernet address 8:......., Host ID:..........
```

Fig. 9 System Message

Replacing the Camera Interface D100

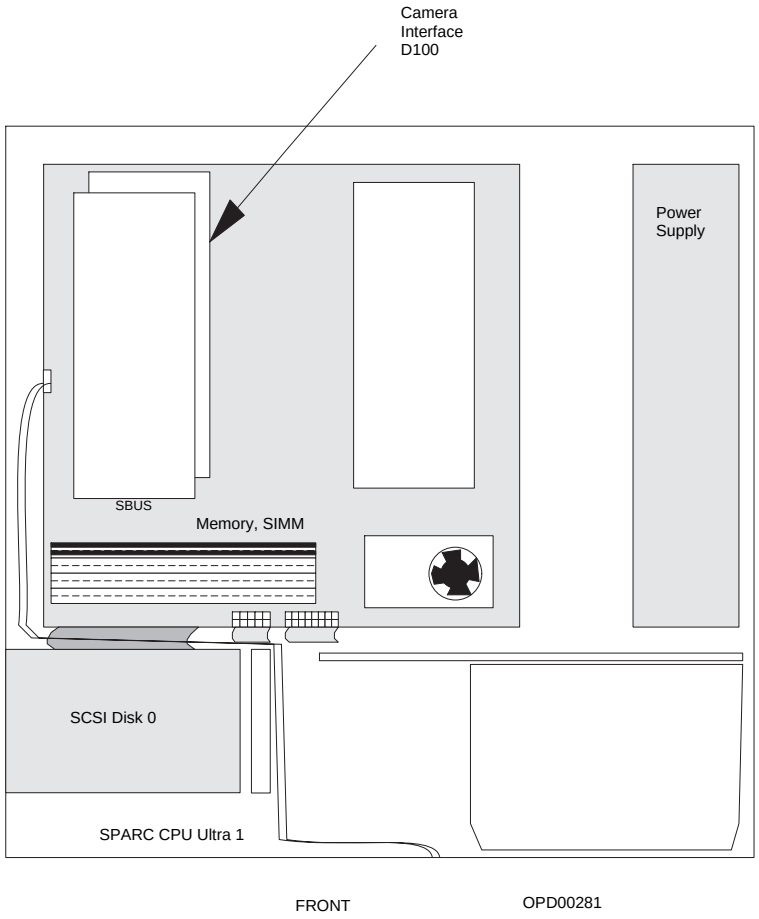


Fig. 10 Location of Camera Interface D100

General

Read these instructions completely prior to beginning the replacement.
Follow all procedures for removing and installing the Camera Interface D100.

CAUTION **Printed circuit boards must be replaced if components soldered onto the board, including fuses, are defective.**

Safety Notes

Follow all general safety guidelines when replacing the Camera Interface D100.
Note the special safety guidelines indicated in these instructions.

Removing the Camera Interface D100

CAUTION	**Switch off the entire system and ensure that it cannot be switched on inadvertently during the procedure before you remove covers. Refer to chapter 1 when you remove the top cover and the side cover from the IMS container.**

NOTICE	**Follow C-MOS guidelines when handling components.**

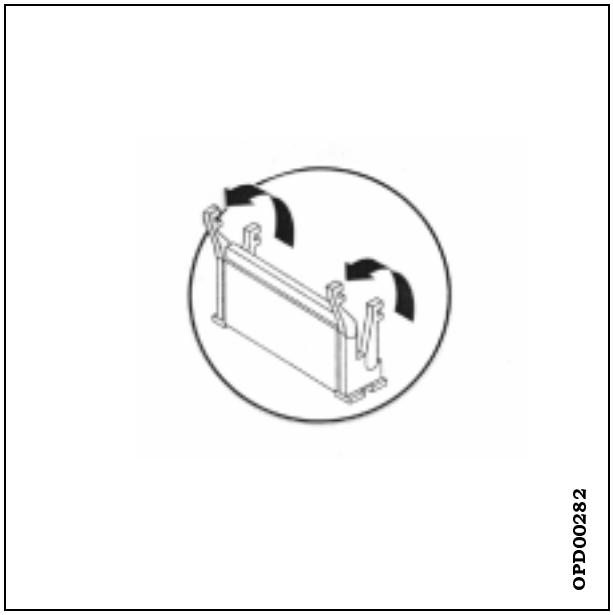


Fig. 11 Card retainers

- Open the top cover of the box (refer to chapter 1).
- Locate the Camera Interface D100 (refer to Fig. 10).
- If there is a PCMCIA board installed, remove the PCMCIA interface (refer to chapter "Removing the PCMCIA Board").
- Open the SBUS card retainers.
- Lift the card from its position. Carefully lift the corners of the D100 to release it from the connector
- Remove the board and place it on the grounded tabletop pad.

Installing the Camera Interface D100

NOTICE	Follow C-MOS guidelines when handling components.

- Open the SBUS card retainers.
- Holding the new D100 by the edges, unpack it. There are no jumpers to be set.
- Holding the D100 at an angle, insert the card backplate behind the tabs of the SBUS opening.
- Lower the card into position. Carefully press the corners of the D100 to push it into the connector. Do not force the card or you will damage the pins on the connector.
- Push the card retainers forward over the edge of the SBUS card.

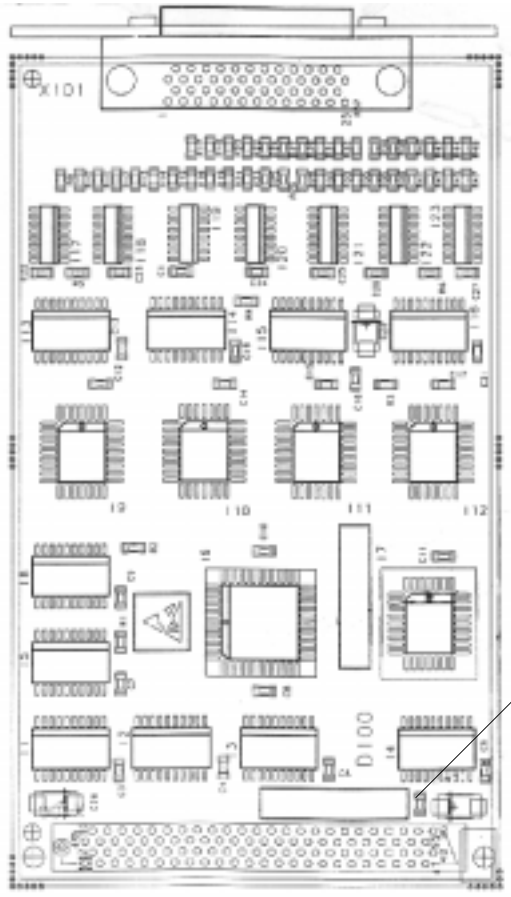


Fig. 12 Camera Interface D100

Tests and Adjustments

- Switch on power to the system.
- You may check the 5 V power on the test points (refer to Fig. 16).
- Ensure that the system is operating properly.

Replacing the PCMCIA Board

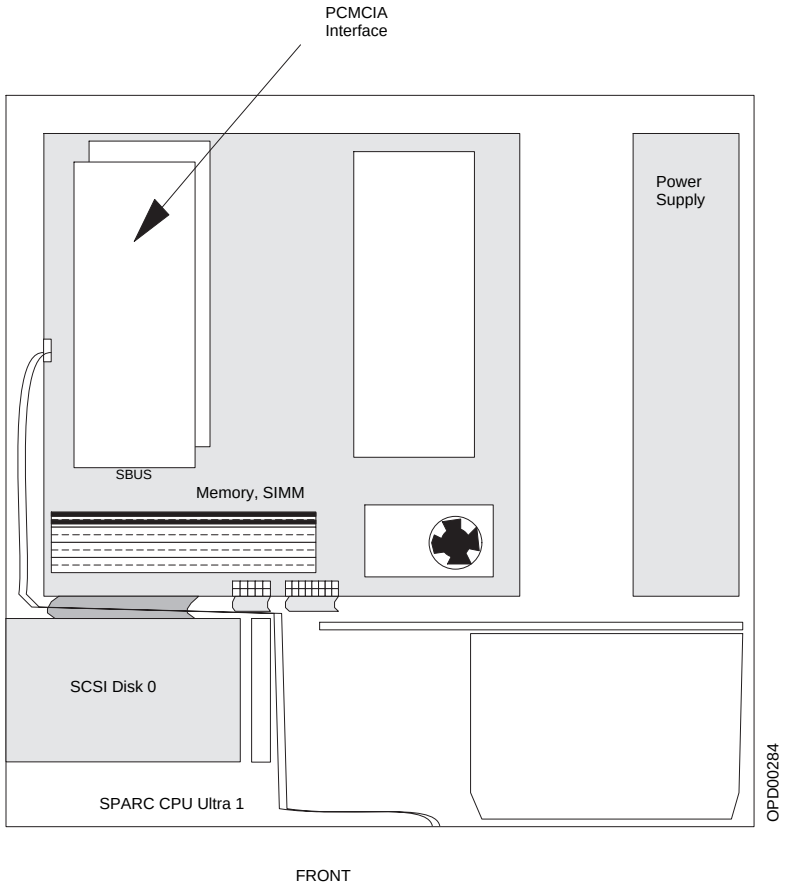


Fig. 13 PCMCIA Interface

General

Read these instructions completely prior to beginning the replacement.
Follow all procedures for removing and installing the PCMCIA board.

CAUTION **Printed Circuit Boards must be replaced if components soldered onto the board, including fuses, are defective.**

PCMCIA is the abbreviation of Personal Computer Memory Card International Association. This is a non-profit trade association founded to standardize the PC Card. The PCMCIA card is a credit-card-sized, removable module that has become the expansion vehicle for (portable) computers.

In the OPDIMA system the PCMCIA Interface is used for the connection to a MODEM.

Safety Notes

Follow all general safety guidelines when replacing the PCMCIA board.
Note the special safety guidelines indicated in these instructions.

Removing the PCMCIA SBUS Card

CAUTION **Switch off the entire system and ensure that it cannot be switched on inadvertently during the procedure before you remove covers. Refer to chapter 1 when you remove the top cover and the side cover from the IMS container.**

NOTICE **Follow C-MOS guidelines when handling components.**

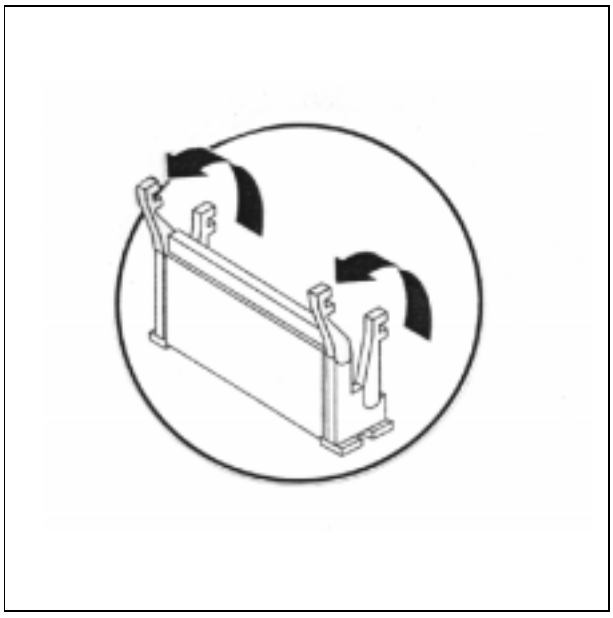


Fig. 14 Card retainers

- Disconnect the cable connections from the front plate of the board.
- Open the top cover of the box (refer to chapter 1).
- Locate the PCMCIA board.
- Open the SBUS card retainers.
- Lift the card from its position. Carefully lift the corners of the board to release it from the connector
- Remove the board and place it on the grounded tabletop pad.

Installing the PCMCIA SBUS Card

NOTICE	Follow C-MOS guidelines when handling components.

- Open the SBUS card retainers.
- Insert the new PCMCIA SBUS board carefully in the in the original location.
- Close the top cover of the box (refer to chapter 1).
- Connect the external connector to the PCMCIA SBUS board.

Removing the PCMCIA Interface

- Release the interface by pushing the eject button (refer to Fig. 15).

Installing the PCMCIA Interface

NOTICE	Follow C-MOS guidelines when handling components.

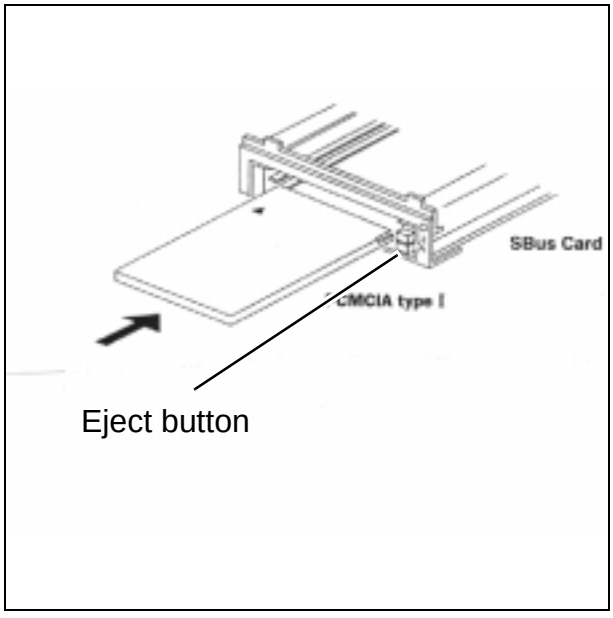


Fig. 15 PCMCIA Interface

- Insert the new PCMCIA interface carefully in the interface slot (refer to Fig. 15).
- Connect the front connector of the PCMCIA interface.

Tests and Adjustments

- Switch on power to the system.
- Ensure that the system is operating properly.

Replacing the Frame Buffer

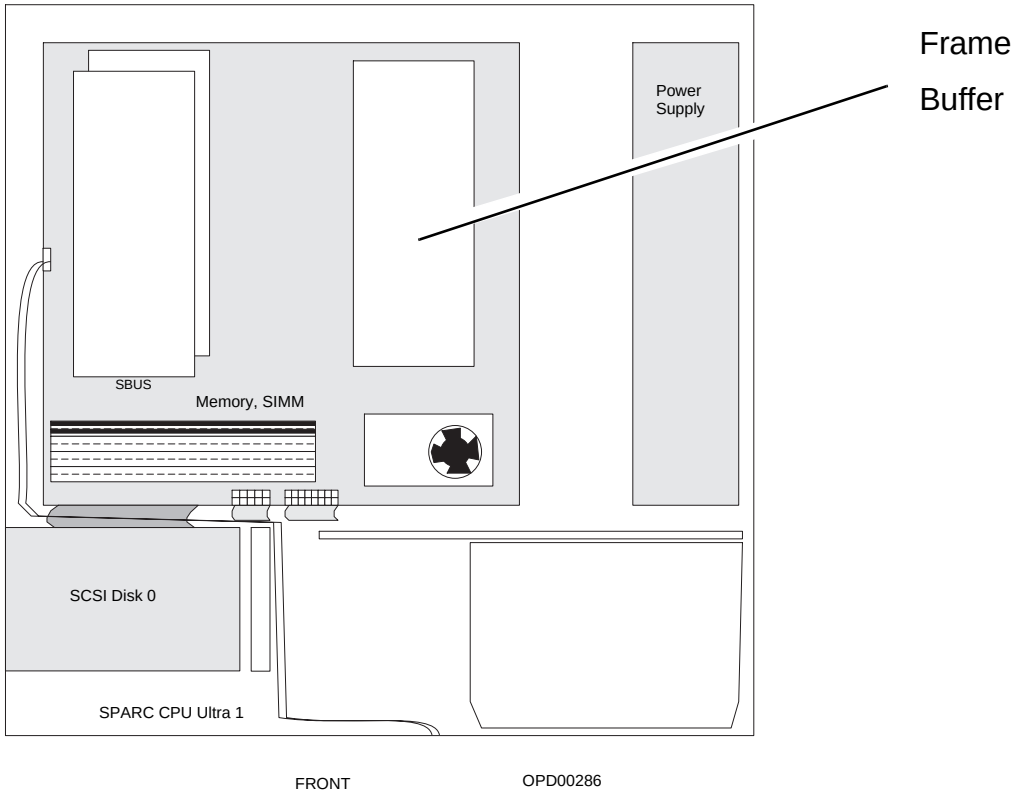


Fig. 16 Frame Buffer

General

Read these instructions completely prior to beginning the replacement.
Follow all procedures for removing and installing the Frame Buffer board.

CAUTION **Printed Circuit Boards must be replaced if components soldered onto the board, including fuses, are defective.**

Safety Notes

Follow all general safety guidelines when replacing the Frame Buffer.
Note the special safety guidelines indicated in these instructions.

Removing the Fame Buffer

CAUTION **Switch off the entire system and ensure that it cannot be switched on inadvertently during the procedure before you remove covers. Refer to chapter 1 when you remove the top cover and the side cover from the IMS container.**

NOTICE **Follow C-MOS guidelines when handling components.**

- Disconnect the cable connections from the front plate of the Frame Buffer.
- Open the SBUS card retainers (refer to Fig. 14).
- Remove the board and place it on the grounded tabletop pad.

Installing the Frame Buffer

NOTICE **Follow C-MOS guidelines when handling components.**

- Insert the new Frame Buffer carefully in the original location.
- Check the jumpers of the frame buffer (refer to Fig. 17).

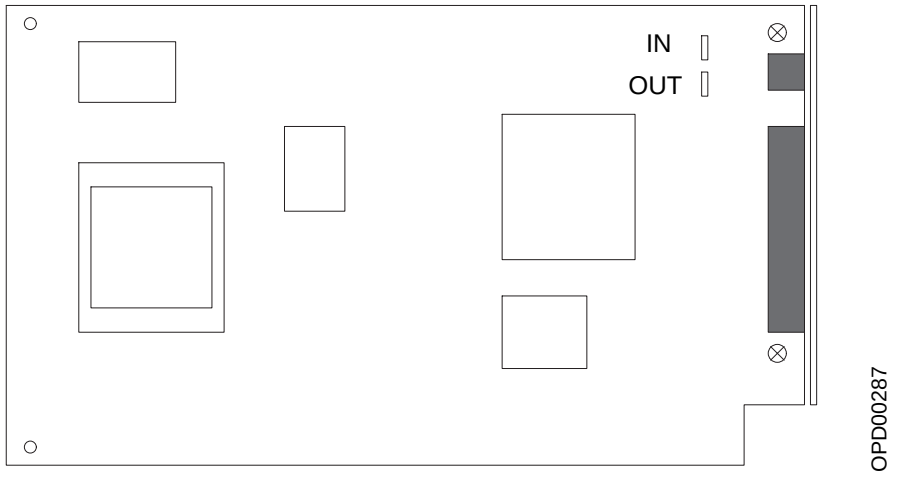


Fig. 17 Jumper Setting Frame Buffer

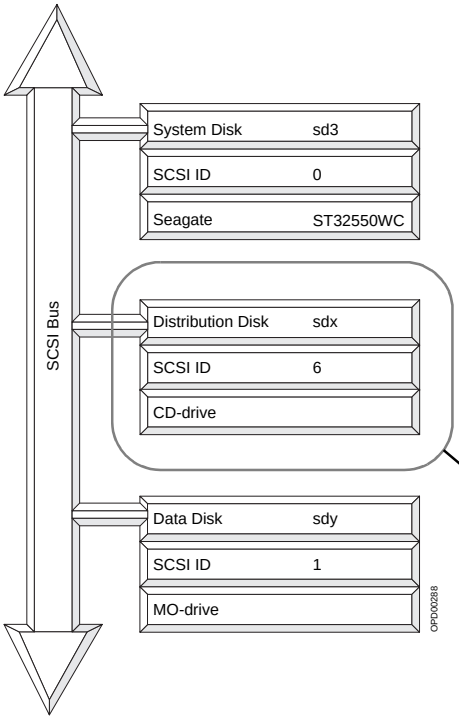
Tests and Adjustments

- Switch on power to the system.
- Ensure that the system is operating properly.

General

Read these instructions completely prior to beginning the replacement.
Follow all procedures for removing and installing the disks.
Follow C-MOS guidelines as required.
Use the tools and auxiliary materials recommended here.
Always replace the entire drive. Replacement of soldered parts is not permitted.

Disk System of the Workstation



The Disk System is located in two boxes:

- System Disk in the main box (CPU box).
- Data disk in the separate MO unit.

The two boxes are connected via a 50-pin SCSI cable. Each device on the SCSI bus has a unique address, the SCSI ID.

CD-drive installed when SW-upgrade

Fig. 1 Disk System

NOTICE **If there is a defect within the MO unit, the complete unit has to be replaced.**

Detect the faulty device

Monitor Mode

General description

The interactive firmware monitor commands provide a user command interface. The monitor will display the OK prompt when it is ready for input.

Select the new command mode by entering

ok n

Available monitor mode commands:

Entering the **boot** command boots the default boot device.

Entering the **show-devs** command displays a list of all device tree nodes.

Entering the **devalias** command displays a list of all device aliases.

Entering the **printenv** command displays the predefined values of the NVRAM.

Entering the **setenv variable value** command changes the selected variable to the new value.

Entering the **set-defaults** command sets the values to the default values.

Entering the **help** command displays the available test categories and subcategories.

Entering the **help xxxxx** command gives you information about **xxxxx** category or subcategory.

The **test-all** command tests all devices below the root node.

The **probe-scsi** command tests the on-board SCSI bus.

The **probe-scsi-all** command tests all installed SCSI buses.

There are two ways to exit the new command mode.

Entering the **old-mode** command returns the display to the boot prompt.

Entering the **reset** command performs a reboot.

To detect a faulty device enter

```
ok probe-scsi
```

Fig. 2 Test of the SCSI bus

The system should show all the drives connected to the bus:

```
Target 0
     Unit 0 Disk SEAGATE ST32550W SUN2.1G .......
                Copyright (c) 1996 Seagate
                All rights reserved ASA 2



Target 1
     Unit 0 Removable Disk HP C1113 F     1.36
                           4XMO
```

Fig. 3 Targets on the SCSI bus

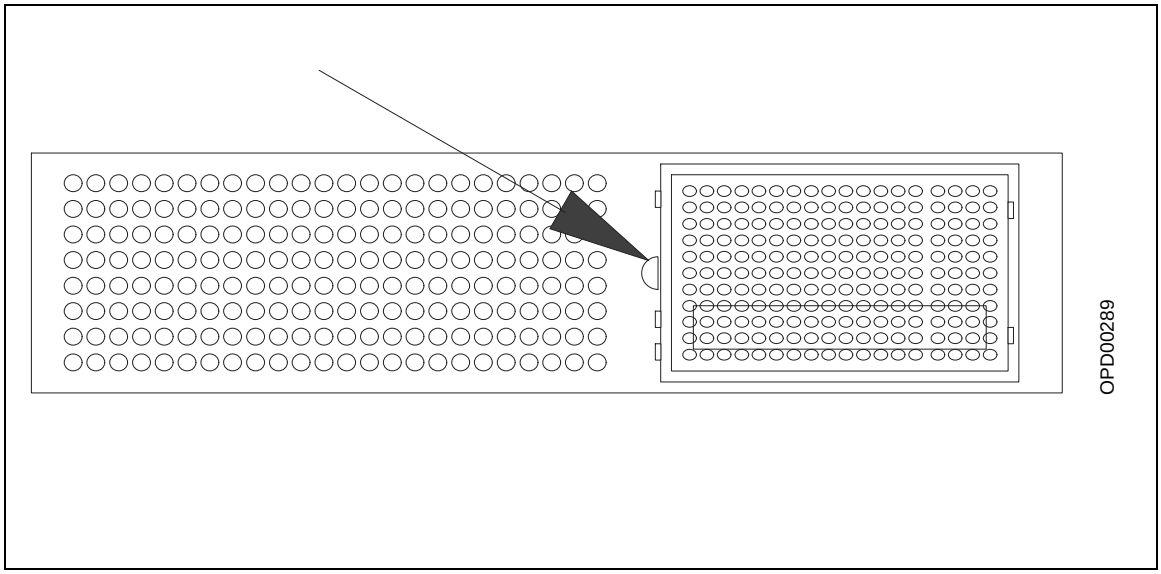
2.1 GB System Disk

Removing the 2.1 GB System Disk

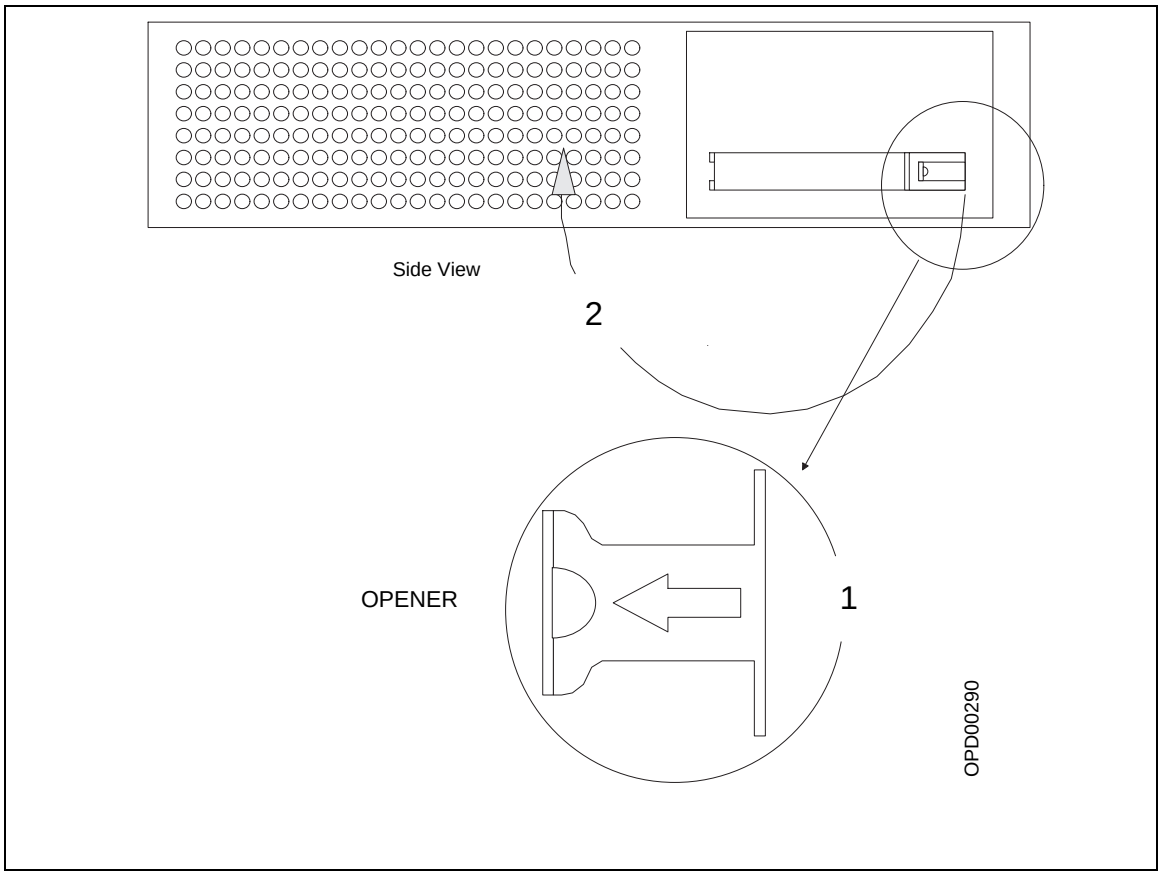
CAUTION	**Switch off the entire system and ensure that it cannot be switched on inadvertently during the procedure before you remove covers.**

NOTICE	**Follow C-MOS guidelines when handling the components.**

- Remove the frame that covers the disk drive. Push a screwdriver in the opening on the left side of the frame (refer to Fig. 4).
- Push the plastic latch right of the disk support (refer to Fig. 5).
- Swing the plastic latch to the left and slide the disk drive support and disk drive outward on the guide rails and remove it from the box.



- Swing the plastic latch to the left and



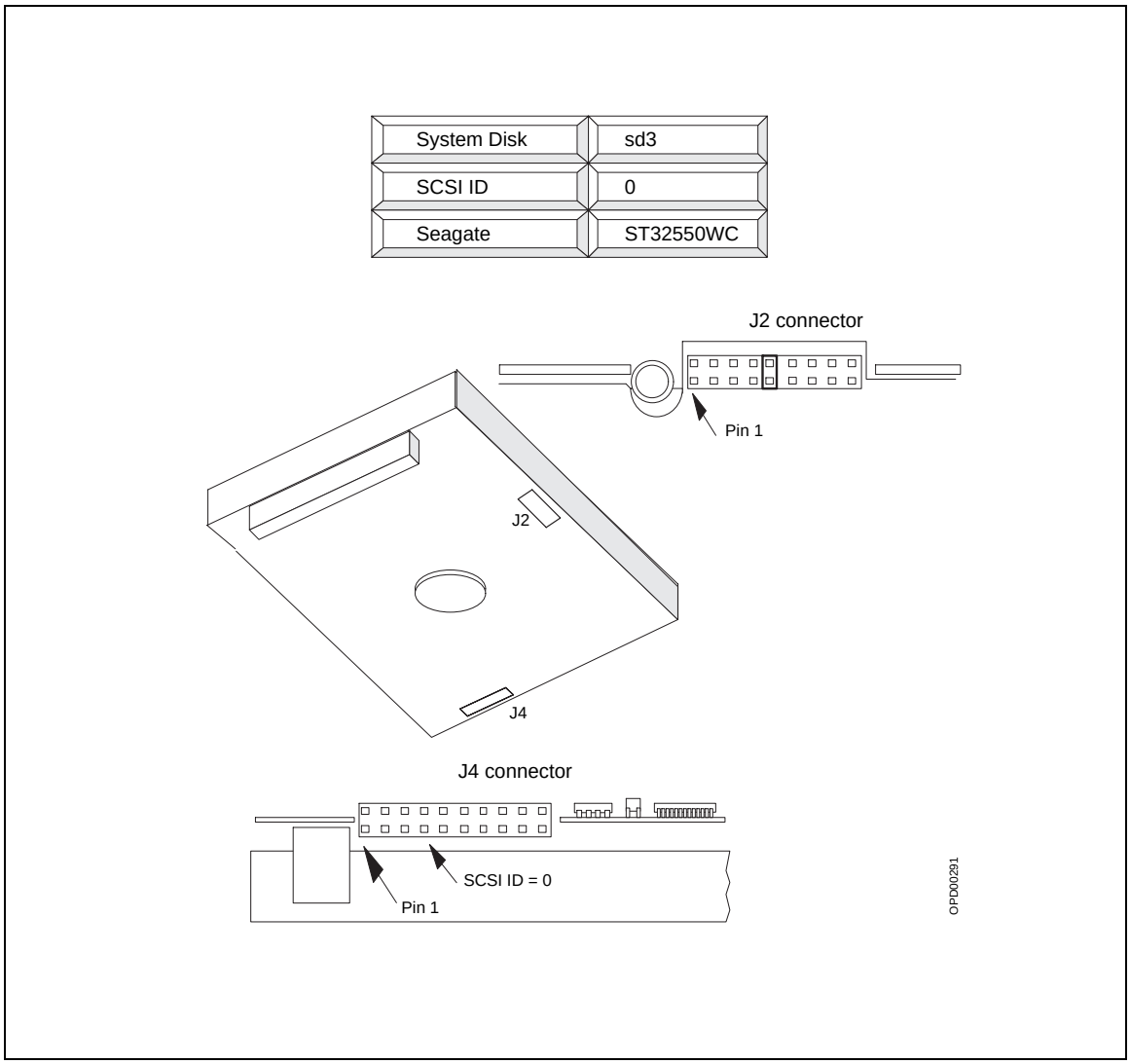
Installing the 2.1 GB System Disk

NOTICE	Follow C-MOS guidelines when handling the components.

SCSI ID	Disk Drive Function	Disk Drive Type
0	System Disk sd3	Winchester Disk Drive
6	Software distribution	CD ROM Disk Drive*
1	Store Disk Drive	Optical Disk Drive

Tab. 1 Workstation Disk System

* CD ROM Disk Drive is installed when SW upgrade shall be performed.



- If the new drive does not have guiding rails, remove them from the old drive and mount the guiding rails on the new drive.
- Set the jumpers and switches on the new disk drive as indicated (refer to Fig. 4).
- Place the new disk drive carefully in its slot and push it firmly into the box until the basic connector clicks into place.
- Close the plastic door.
- Close the metal frame.

Tests and Adjustments

- Switch on the system.
- Halt the system by pressing "STOP" "A".
- Enter the following on the keyboard

```
ok probe-scsi
```

Fig. 7 Test of the SCSI bus

- The system should show all the drives connected to the bus (refer to Fig. 3).
- If the disk drives shows up correctly load the software (refer to chapter "Loading the System Software").

Loading the System Software

See MAMMOMAT 3000 Opdima™ Digital Biopsy and Spot Imaging System - Service Instructions (SPB7-230.061.03.....)

Archive System MO unit

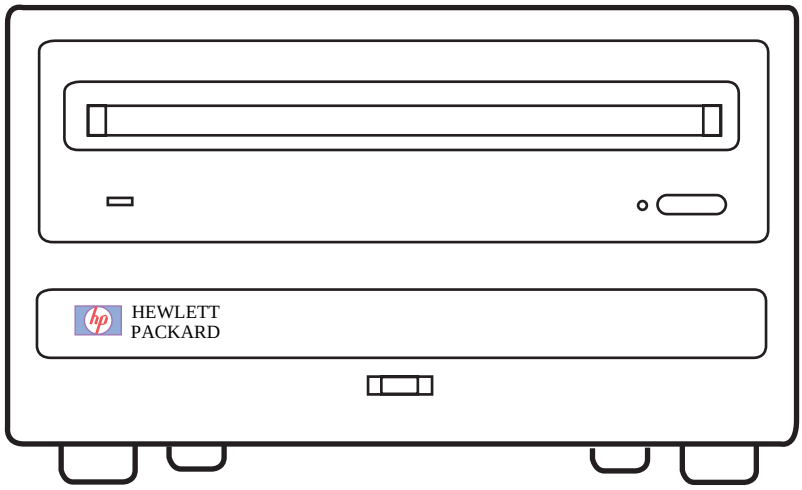


Fig. 8 The MO unit, front view

Removing the Archive System MO unit

CAUTION	**Switch off the entire system and ensure that it cannot be switched on inadvertently during the procedure before you remove covers.**
NOTICE	**Follow C-MOS guidelines when handling the components.**
NOTICE	**If there is a defect within the MO unit, the complete unit has to be replaced.**

- Disconnect the power supply cable (AC IN) and SCSI cable from the back of the unit (refer to Fig. 10).
- Unplug the SCSI terminator from the back of the unit (refer to Fig. 10).
- Remove the unit.

Installing the Archive System MO

NOTICE	**Follow C-MOS guidelines when handling the components.**

The archive system consists of two devices:

SCSI ID	Disk Drive Function	Disk Drive Type
6	Software distribution	CD ROM Disk Drive*
1	Store Disk Drive	Optical Disk Drive

Tab. 2 Archive System CD/MO

* CD ROM Disk Drive is installed when SW upgrade shall be performed.

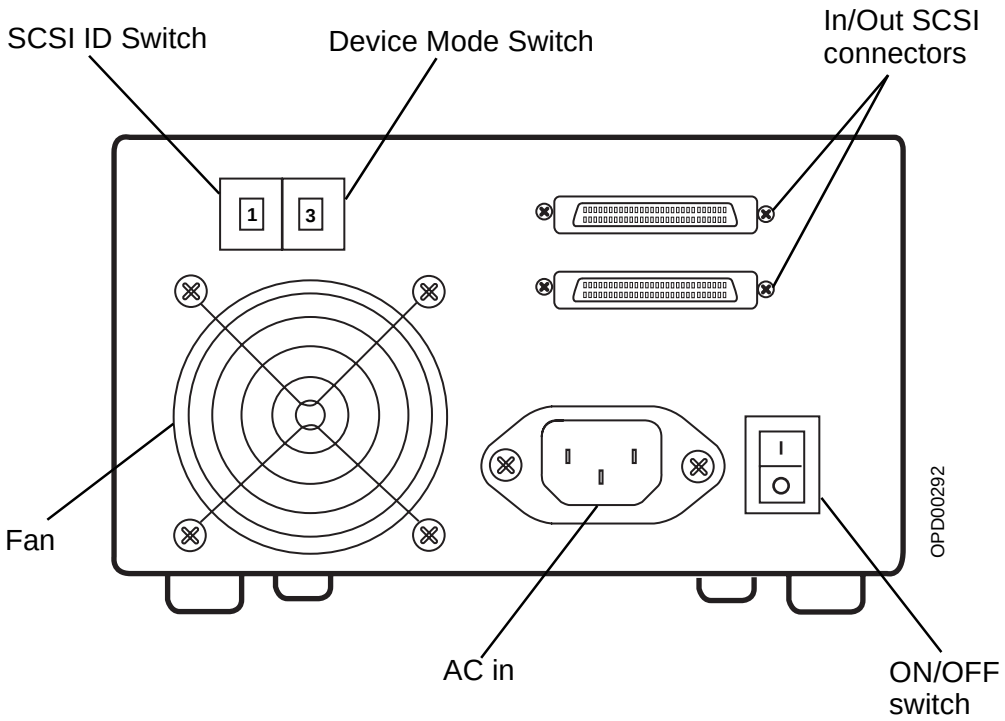


Fig. 9 MO System, back view

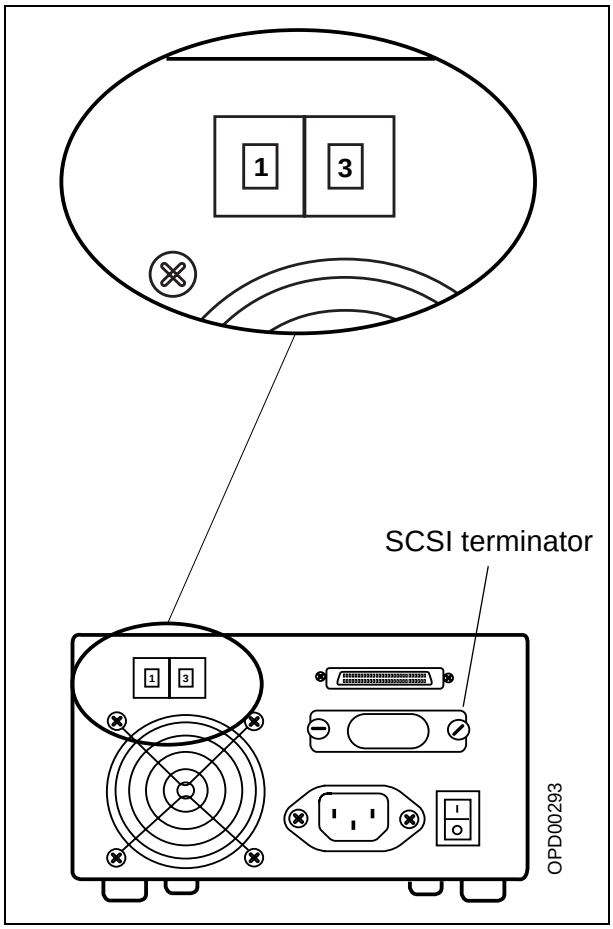


Fig. 10 Archive System SCSI ID Switches

- Set the switches on the new archive system according to the instructions (refer to Fig. 10).
- Connect the power supply cable, the SCSI terminator and the SCSI cable to the archive system.

Tests and Adjustments

- Switch on the system.
- Ensure that the system is operating properly.

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Replacing the Power Supply

Removing the Power Supply

CAUTION **Switch off the entire system and ensure that it cannot be switched on inadvertently during the procedure before you remove covers. Refer to chapter 1 when you remove the covers from the box.**

NOTICE **Follow C-MOS guidelines when handling components.**

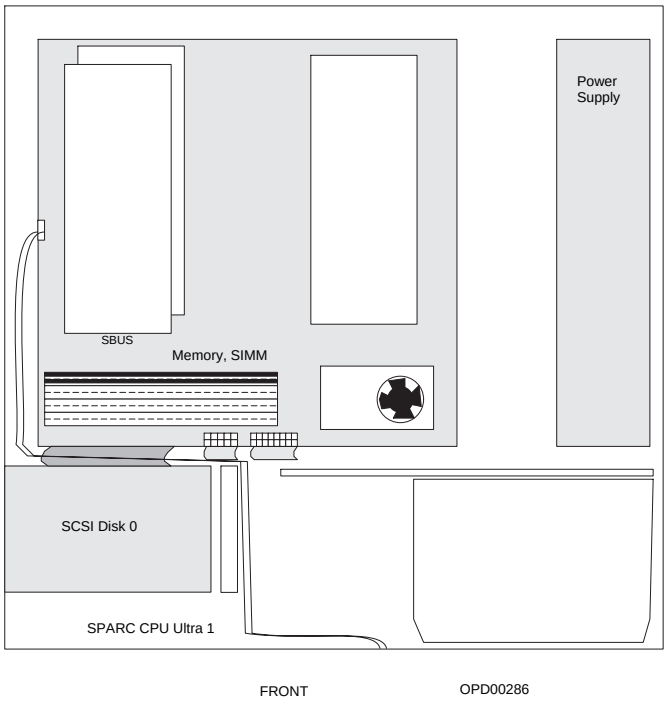

Fig. 1 Replacing the Power Supply

- Disconnect the power supply cable from the back of the box.
- Loosen the screw that secures the power supply (refer to 1, Fig. 1).

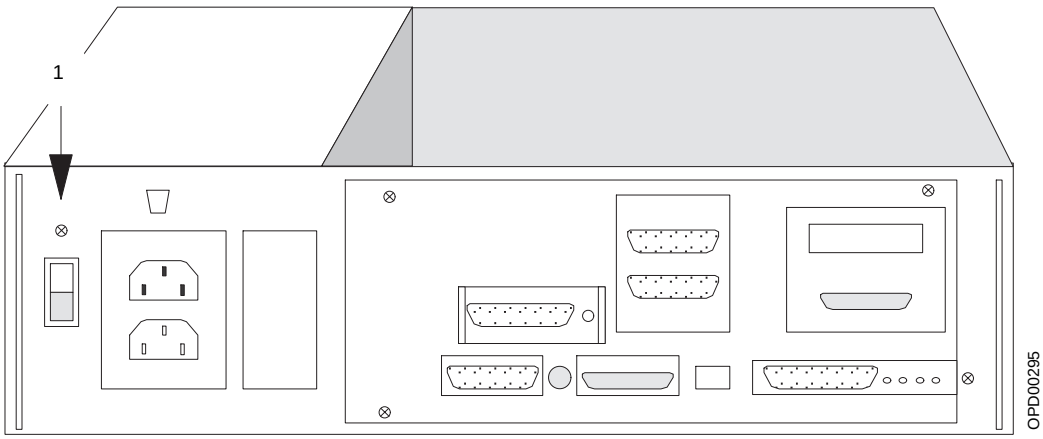

Fig. 2 Replacing the Power Supply

- Disconnect the three power supply plugs (refer to Fig. 3). Notice that each plug has a lock that keeps it from opening inadvertently.

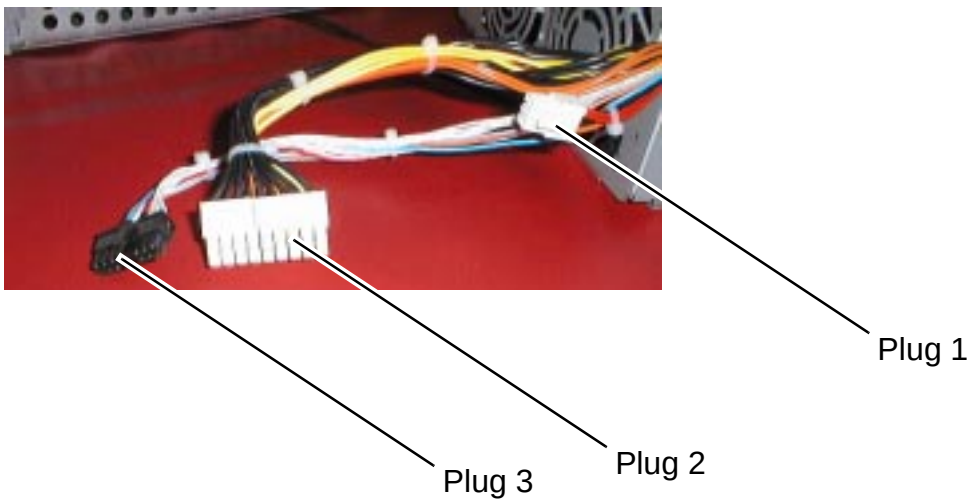

Fig. 3 Power Supply Connector

- Move the power supply a few millimeters to the left side to release it from the bottom.

Installing the Power Supply

NOTICE	Follow C-MOS guidelines when handling components.

- Place the new power supply in its place in the box.
- Move the power supply a few millimeters to the right side to fix it on the bottom.
- Connect the three power supply plugs (refer to Fig. 3). Notice that each plug has a lock that keeps it from opening inadvertently.
- Fasten the screw that fixes the power supply (refer to 1, Fig. 1).
- Connect the power supply cable to the back of the box.

Tests and Adjustments

- Switch on the system.
- Ensure that the system is operating properly.

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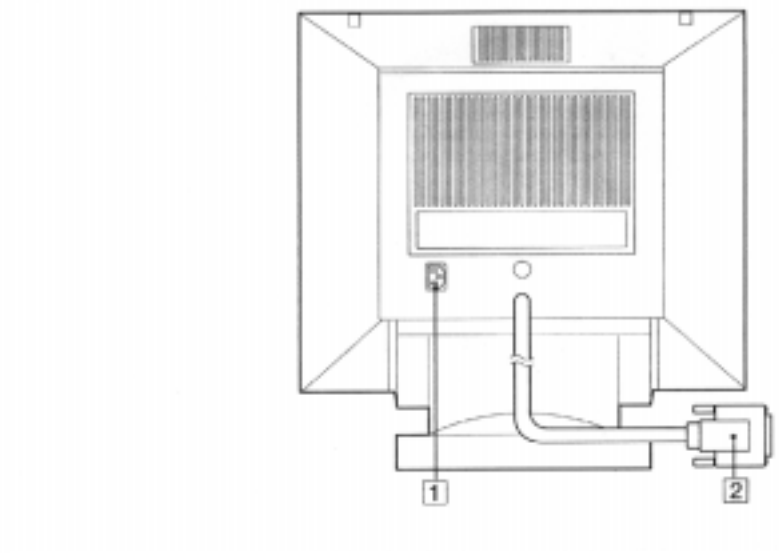
Replacing the Monitor



OPD00297

Fig. 1 20 " Monitor, back view

General

Read these instructions completely prior to beginning the replacement.
Follow all procedures for removing and installing the monitors.

NOTICE	**When the workstation is switched on, the monitor goes to "power saving" for app. ten seconds.**

NOTICE	**A defective memory can cause a dark monitor [1]).**

[1]) refer to chapter 2

Safety Notes

Follow all general safety guidelines.
Note the special safety guidelines indicated in these instructions.
The entire system should be switched off when the monitor is being replaced.

NOTICE	**If a 21" monitor is installed be sure not to change the proportions between length and width. If this has been done anyway, press the auto sizing and centering button marked with a symbol (see Fig. 2) to restore the previous settings.**

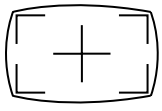


Fig. 2 Symbol

Removing the Monitor

- Disconnect the power cord from the monitor.

CAUTION	**Switch off the entire system and ensure that it cannot be switched on inadvertently during the procedure.**

- Disconnect the monitor interface cable.

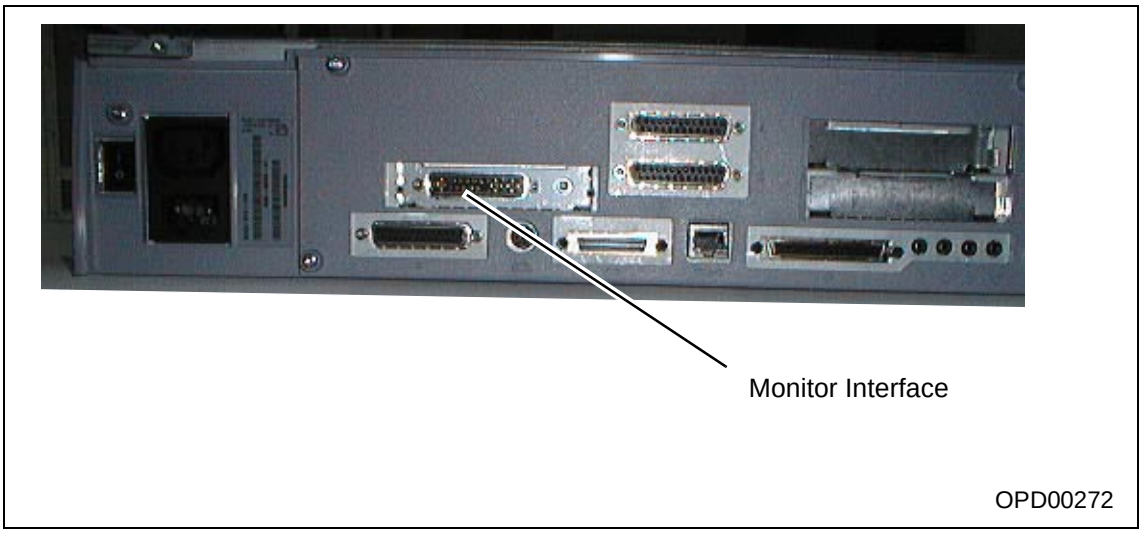


Fig. 3 Rear Side of the box, Monitor Interface

- Remove the monitor.

Installing the Monitor

Install the monitor by reversing the order in which it was removed.

Tests and Adjustments

- Ensure that the system is operating properly.

Replacing the Keyboard

General

Read these instructions completely prior to beginning the replacement.
Follow all procedures for removing and installing the keyboard.
Follow C-MOS guidelines as required.
Always replace the entire keyboard. Replacement of parts is not permitted.

Safety Notes

Follow all general safety guidelines.
Note the special safety guidelines indicated in these instructions.
The entire system should be switched off when parts are being replaced.

Removing the Keyboard

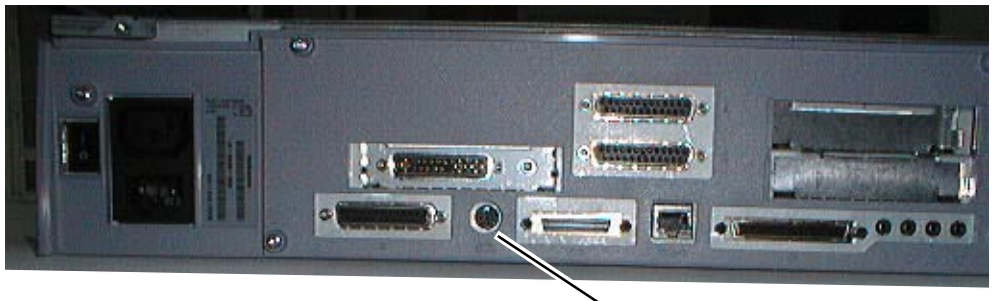


Fig. 4 Back of the box (without D100).

CAUTION	**Switch off the entire system and ensure that it cannot be switched on inadvertently during the procedure.**

- Remove the keyboard connector in back of the box.

NOTICE	**Ensure that the cables are not damaged**

- Remove keyboard with cable.

Installing the Keyboard

Install the new keyboard by reversing the order in which it was removed.

Tests and Adjustments

- Ensure that the system is operating properly.

Replacing the Mouse

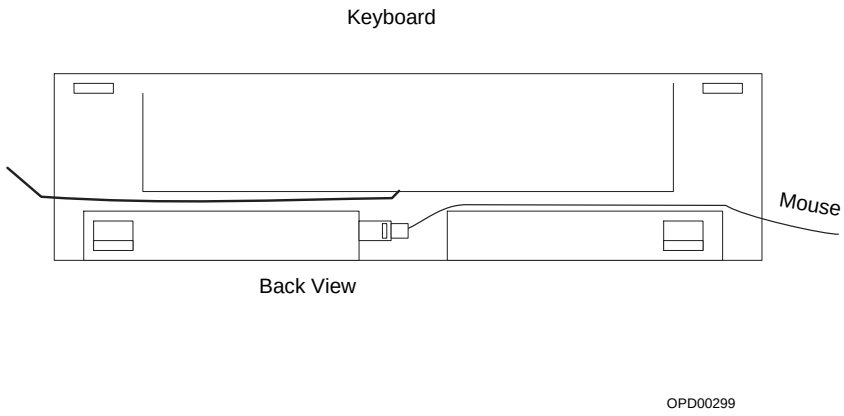


Fig. 5 Rear view of the keyboard: Replacing the mouse

General

Read these instructions completely prior to beginning the replacement.
Follow all procedures for removing and installing the mouse.
Always replace the entire mouse. Replacement of parts is not permitted.

Safety Notes

Follow all general safety guidelines (System binder, Register 2, Safety Instructions).
Note the special safety guidelines indicated in these instructions.
The entire system should be switched off when parts are being replaced.

Removing the Mouse

CAUTION	**Switch off the entire system and ensure that it cannot be switched on inadvertently during the procedure.**
NOTICE	**Ensure that the cables are not damaged.**

- Remove the mouse with the cable (refer to Fig. 6).

Installing the Mouse

Install the new mouse by reversing the order in which it was removed.

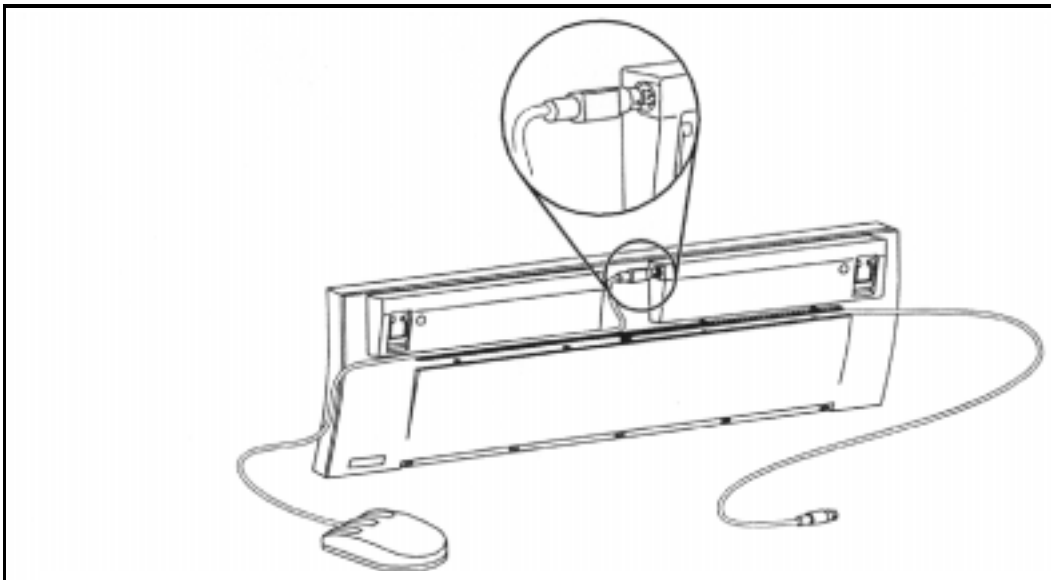


Fig. 6 Rear view of the keyboard: Installing the mouse

Tests and Adjustments

- Ensure that the system is operating properly.

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